

REMARKS

The Office Action dated December 20, 2001 has been fully considered. Claims 1-13 have been amended. No new matter has been added. Claims 1-13 are pending in this application. Reconsideration of the claims is respectfully requested.

In paragraph 4 on page 3 of the Office Action, claims 1-13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,732,127 issued to Hayes in view of U.S. Patent 5,168,498 issued to Adams et al (hereinafter Adams).

The Applicants respectfully traverse the rejection for the following reasons.

Applicants' claim 1 sets forth, among other features, a packet radio system comprising a digital mobile communication network (e.g. BTS, BSC, MSC), packet data terminal equipments (e.g. MS), packet radio support nodes (e.g. SGSN) connected to the mobile communication network which provides them with a radio interface for packet switched data transmission with the packet data terminal equipments, gateway packet radio support nodes (GGSN) providing an access point to an external packet data network (e.g. 15), and an internal packet switched backbone network (e.g. 13) to which the packet radio support nodes and the gateway packet radio support nodes are connected. The packet radio system further comprises a billing gateway support node (e.g. BGGSN), connected to said internal backbone network to receive user-specific charging information collected by the other support nodes (SGSN and GGSN) and to forward the charging information to the charging system.

In other words, Applicants' claimed invention establishes a charging system arranged within a packet switched network, such as a General Packet Radio Service (GPRS) interconnected through a GPRS backbone network. Packet data service

nodes (SN) called Serving GPRS Support Nodes (SGSN) are connected to a GSM mobile communication network, so that Mobile Subscribers (MS) may obtain a packet data service via a plurality of GSM base stations.

The charging system of Applicants' claimed invention seeks to solve the problems as discussed on page 2 line 14 to page 3 line 2. Stated briefly, Applicants' claimed invention solves the problem of GPRS charging, where there are no direct interfaces from the GPRS system to the mobile network that are suitable for GPRS charging.

Hayes, on the other hand, defines a system that utilizes Signaling Connection Control Part (SCCP) to transmit billing records from an administrative billing center 10C to a Signaling System #7 telecommunications network. Hayes, therefore, defines a billing system for a circuit switched communication network. Applicants' claimed invention seeks to set forth a billing system for a packet switched communication network that provides a packet switched data service to a GSM mobile station, for example.

Applicants' claimed invention is different from Hayes because claim 1 sets forth network components of a packet switched network, which is a completely different data switching topology from the circuit switched topology taught in Hayes. It is not adequate to cite Hayes as an obvious reference to the Applicants' claimed invention, since Hayes requires a totally different topology to effect the billing system. Although Hayes may be similar to Applicants' claimed invention in that Hayes teaches a network based billing system, Hayes does not implement the billing system in the same way.

Hayes provides a circuit switched billing system, while Applicants' claimed invention sets forth, among other features, a packet switched billing system to allow proper billing procedures to be implemented for Mobile Subscribers receiving packet switched data services from a GPRS network, where no adequate billing procedures are set forth in the art for billing records to be generated within the mobile communication network of the Mobile Subscriber.

Applicants submit that Hayes teaches a billing system implemented within a circuit switched network, which is in direct contrast to the independent and patentably distinct billing system, which among other features, facilitates proper billing procedures between a packet switched network and a GSM mobile network, according to the present invention. Applicants submit, therefore, that Hayes merely teaches a function that is only generally associated with Applicants' claimed invention and does not constitute a proper reference under U.S.C. §103.

Similarly to Hayes, Adams merely teaches a function that is generally associated with the Applicants' claimed invention, since Hayes teaches a mobile communication system that may be applicable to function as a radio access network for the packet radio support nodes of Applicants' claimed invention, but fails to disclose various other claimed features. Elements set forth in Applicants' claim 1 that are missing from Adams, as well as the combination of Hayes with Adams, include packet radio support nodes (e.g. SGSN), gateway packet radio support nodes (e.g. GGSN), internal packet switched backbone network (e.g. 13) and finally the billing gateway support node (e.g. BGGSN).

The combination of Hayes and Adams fails to teach or even fairly suggest all of the elements of Applicants' claim 1. In fact, the combination of Hayes and Adams is counter-productive, since the function that Hayes seeks to enhance, Adams seeks to eliminate. In particular, Hayes is specifically related to a method for transporting charging records from a local exchange, i.e., a mobile services switching center, to an administrative center by means of an SS7 signalling network. Conversely, the purpose of Adams is to eliminate such local exchanges, so that a distributed system of suitable intelligence is created to handle control information locally.

Applicants submit that not only does the combination of Hayes and Adams fail to teach or fairly suggest Applicants' claimed invention, but the motivation to combine the teachings of Hayes with Adams is absent, since the combination is counter-productive as discussed above. Applicants submit, therefore, that claim 1 patentably distinguishes over the combination of Hayes and Adams and is in condition for allowance.

Dependent claims 2-13, which are dependent from independent claim 1, are also rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Hayes and Adams. While Applicants do not acquiesce with any particular rejections to these dependent claims, it is believed that these rejections are now moot in view of the remarks made in connection with independent claim 1. These dependent claims include all of the limitations of the base claim and any intervening claims, and recite additional features which further distinguish these claims from the cited references. Therefore, dependent Claims 2-13 are also allowable over the combination of Hayes and Adams.

CONCLUSION

In view of the amendments and reasons provided above, it is believed that all pending claims are in condition for allowance. The amendments clarify the patentable invention without adding new subject matter. Applicants respectfully request favorable reconsideration and early allowance of all pending claims.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Agent for Applicants, Michael T. Wallace, at 952.253.4127.

Respectfully submitted,

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Appendix A
Marked Up Version of the Entire Claim Set

- 1 1. (Amended) A packet radio system comprising:
 - 2 a digital mobile communication network [(BTS, BSC, MSC)];
 - 3 packet data terminal equipments [(MS)];
 - 4 packet radio support nodes [(SGSN)] connected to the mobile communication
 - 5 network which provides them with a radio interface for packet switched data transmission
 - 6 with the packet data terminal equipments;
 - 7 gateway packet radio support nodes [(GGSN)] providing an access point to an
 - 8 external packet data network [(15)] ; [and]
 - 9 an internal packet switched backbone network [(13)] to which the packet radio
 - 10 support nodes [(SGSN)] and the gateway packet radio support nodes [(GGSN)] are
 - 11 connected; [.]
 - 12 [characterized by] and
 - 13 a billing gateway support node [(BGGSN)], connected to said internal backbone
 - 14 network [(BGGSN)] to receive user-specific charging information collected by the other
 - 15 support nodes [(SGGSN, GGSN)] and to forward the charging information to the
 - 16 charging system.

1 2. (Amended) [A method] The packet radio system as claimed in claim 1, [
2 c h a r a c t e r i z e d in that] wherein the communication protocol between the billing
3 gateway support node
4 [(BGGSN)], the packet radio support nodes [(SGGSN)] and the gateway packet radio
5 support nodes
6 [(GGSN)] is a packet switched communication protocol of said internal backbone
7 network.

1 3. (Amended Twice) [A method] The packet radio system as claimed in
2 claim 1, [c h a r a c t e r i z e d in that] wherein the communication protocol between the
3 billing gateway support node [(BGGSN)], the packet radio support nodes [(SGGSN)]
4 and the gateway packet radio support nodes [(GGSN)] is independent of a
5 communication protocol between the gateway support node and the charging system.

1 4. (Amended Twice) [A] The packet radio [network] system as claimed in
2 claim 1, [c h a r a c t e r i z e d in that] wherein the communication protocol between the
3 billing gateway support node [(BGGSN)] and the charging system is different from a
4 packet switched communication protocol of said internal backbone network.

1 5. (Amended Twice) [A] The packet radio [network] system as claimed in
2 claim 1,
3 [c h a r a c t e r i z e d in that] wherein the billing gateway support node [(BGGSN)] is
4 provided with a direct connection to the billing system.

1 6. (Amended Twice) [A] The packet radio [network] system as claimed in
2 claim 1, [c h a r a c t e r i z e d in that] wherein the billing gateway support node
3 [(BGGSN)] is connected to the billing system via an intermediate network, such as an
4 intelligent network, or via an intermediate network element, such as a mobile services
5 switching center [(MSC)].

1 7. (Amended Twice) [A] The packet radio [network] system as claimed in
2 claim 1, [c h a r a c t e r i z e d in that] wherein the address of the billing gateway
3 support node [(BGGSN)] to which the other support nodes send charging information is
4 fixed.

1 8. (Amended Twice) [A] The packet radio [network] system as claimed in
2 claim 1, [c h a r a c t e r i z e d in that] wherein the address of the billing gateway
3 support node [(BGGSN)] to which the other support nodes send charging information is
4 dynamic.

1 9. (Amended) [A] The packet radio [network] system as claimed in claim 8,
2 [c h a r a c t e r i z e d in that] wherein the address of the billing gateway support node
3 [(BGGSN)] to which the other support nodes send charging information is subscriber-
4 specific and is given to the respective other support node when the subscriber begins
5 using a service.

1 10. (Amended Twice) [A] The packet radio [network] system as claimed in
2 claim 8, [characterized in that] wherein the support nodes are arranged to send
3 the charging information to the billing gateway support node [(BGGSN)] of the
4 subscriber's home network or the visited network.

1 11. (Amended) [A method] The packet radio system as claimed in claim 2, [
2 characterized in that] wherein the communication protocol between the billing
3 gateway support node [(BGGSN)], the packet radio support nodes [(SGGSN)] and
4 the gateway packet radio support nodes [(GGSN)] is independent of a
5 communication protocol between the gateway support node and the charging system.

1 12. (Amended) [A] The packet radio [network] system as claimed in claim 2,
2 [characterized in that] wherein the communication protocol between the billing
3 gateway support node [(BGGSN)] and the charging system is different from a packet
4 switched communication protocol of said internal backbone network.

1 13. (Amended) [A] The packet radio [network] system as claimed in claim 3,
2 [characterized in that] wherein the communication protocol between the billing
3 gateway support node [(BGGSN)] and the charging system is different from a packet
4 switched communication protocol of said internal backbone network.